

A CLASSIFICATION OF THE SUBORDER CHALASTOGASTRA OF THE HYMENOPTERA.

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That the morphological characters exhibited by the most useful organs were least important as exhibiting relationship, for the reason that such characters were most subject to variation, whereas structures of less use and importance were necessarily less subject to variation and hence more indicative of affinities. (Dr. T. N. Gill, 1901.)

The name "Chalastogastra" is used, as the best one that has been proposed, and it has been in use for a number of years in Europe. Many other names have been given to this group of insects, but most of them are based on their habits.

The nomenclature of the thorax and anterior wing is that given by Snodgrass.¹ The nomenclature of the posterior wing is that used by Cresson. The first dorsal abdominal segment (basal plates of authors) is called the propodeum.

The present paper does not deal with groups lower than tribes. Genera not known from specimens are not placed. All species known to the writer can easily be placed in the tribe to which they belong. It would be a great favor to the writer if other workers would place the genera, not placed and known to them, into the division to which they belong.

Suborder CHALASTOGASTRA.

TABLE TO THE SUPERFAMILIES.

Posterior margin of the pronotum straight or nearly so, being nearly the shortest distance between the anterior margins of the tegulæ; mesonotum very short and never extending much beyond the anterior margins of the tegulæ; proepimeron wanting.....	<i>Megalodontoidea</i>	
Posterior margin of the pronotum strongly curved; mesonotum longer and extending well beyond the anterior margins of the tegulæ.....		1
1. Metanotum concealed, but the metapostnotum is present and large; antennæ inserted much below the lower margins of the eyes, and below the apparent clypeus; propodeum not divided; proepimeron wanting; anterior wings with two cubital cells.....	<i>Oryssoida</i>	
Metanotum always present, although the metapostnotum is sometimes concealed; antennæ inserted well above the clypeus; anterior wings with more than two cubital cells.....		2

¹The thorax of the Hymenoptera. Proc. U. S. Nat. Mus., vol. 39, no. 1774, pp. 37-91, plates 1-16. 1910.

2. Scutellum completely separated from the mesoscutum by a suture; proepimeron wanting; anterior tibiæ with one apical spur; sheath very long and exerted beyond the tip of the abdomen; cubitus joining the basal vein much below the costa..... *Sirecoidea*
 Scutellum never completely separated from the mesoscutum by a suture, the suture always wanting laterally; proepimeron present; anterior tibiæ with two apical spurs; cubitus joining the costa or touching the basal vein very close to the costa; mesoprescutum always present *Tenthredinoidea*

SUPERFAMILY MEGALODONTOIDEA.

TABLE TO THE FAMILIES.

- First perapterum wanting; anterior tibiæ with two calcaria
Megalodontida
 First perapterum present, seen a short distance below the tegulæ as a small free plate..... 1
 1. Anterior tibiæ with one calcaria; basal joints of the flagellum separate; intercostal vein wanting; radial cell with one cross-vein; slender, elongate species..... *Cephidæ*
 Anterior tibiæ with two calcaria; basal joints of the flagellum consolidated into a long basal joint; intercostal vein present; radial cell with two cross-veins; species robust *Xyelidæ*

FAMILY MEGALODONTIDÆ.

TABLE TO THE SUBFAMILIES.

- Scutellar lobe rudimentary or wanting; transverse median and basal veins interstitial or nearly so; intercostal vein wanting *Megalodontina*
 Scutellar lobe large; transverse median vein received near the middle of the first discoidal cell; intercostal vein present..... *Pamphiliina*

FAMILY XYELIDÆ.

This family contains five genera which are so closely related that smaller divisions cannot well be made.

FAMILY CEPHIDÆ.

This group has long been recognized as a family. Konow indicates two tribes in his Cephini, but these divisions are hardly of subfamily value; and until these insects have been more carefully studied I prefer not to make any division into subfamilies. At some time it may

be advisable to unite the Cephidæ and Xyelidæ into one family, treating the groups here indicated as families as subfamilies.

SUPERFAMILY ORYSSOIDEA.

FAMILY ORYSSIDÆ.

This family, which has the first perapterum wanting, has been recognized for a number of years. It has been divided into five genera, which, judging from the descriptions and a small amount of exotic material, are so closely related as to make a division into subfamilies unadvisable.

SUPERFAMILY SIRECOIDEA.

TABLE TO THE FAMILIES.

- Notauli present; mesoscutum without oblique sutures from the tegulæ to the anterior margin of the scutellum; pronotum very short medially and not angulate laterally; apex of the abdomen normal; anterior wings with an intercostal vein..... *Xiphydriidæ*
- Notauli wanting; mesoscutum with oblique sutures from the tegulæ to the anterior margin of the scutellum; pronotum large, perpendicular anteriorly and angulate laterally; apex of the abdomen with a triangular-shaped plate; anterior wings without an intercostal vein... *Sirecidæ*

FAMILY XIPHYDRIIDÆ.

In the presence of notauli, the indication of the first perapterum, and the venation this family is more generalized than the Sirecidæ.

TABLE TO THE SUBFAMILIES.

- Pronotum without a distinct dorsal surface laterally, and when seen from above deeply emarginate anteriorly; radial cell with a cross vein..... *Xiphydriinæ*
- Pronotum with a distinct dorsal surface laterally, and when seen from above not deeply emarginate anteriorly; radial cell without a cross-vein..... *Derecystinæ*

FAMILY SIRECIDÆ.

TABLE TO THE SUBFAMILIES.

- Antennæ long and slender, basal vein received near the middle of the first discoidal cell; second transverse cubitus present..... *Sirecinæ*
- Antennæ short and stout; basal vein and transverse median interstitial, or nearly so; second transverse cubitus wanting..... *Tremecinæ*

SUBFAMILY SIRECINÆ.

TABLE TO THE TRIBES.

Hind tibiæ with two calcaria; humerus (2d A) and transverse median of the hind wings present.....	<i>Sirecini</i>
Hind tibiæ with one calcaria; humerus (2d A) and transverse median of the hind wings wanting.....	<i>Xerini</i>

SUPERFAMILY TENTHREDINOIDEA.

TABLE TO THE FAMILIES.

First perapterum present.....	1
First perapterum wanting.....	6
1. Abdomen sharply angled laterally so the dorsal sclerites are sharply divided into a dorsal and ventral surface; antennæ clavate.....	<i>Cimbecidæ</i>
Abdomen not sharply angled laterally; antennæ not clavate.....	2
2. Sternauli (a suture separating the mesosternum from the mesoepisternum) present.....	3
Sternauli wanting.....	4
3. Posterior coxæ well separated; antennæ many-jointed	<i>Perreyiidæ</i>
Posterior coxæ contiguous, or nearly so; antennæ three-jointed.....	<i>Argidæ</i>
4. Posterior coxæ well separated; antennæ four-jointed; first discoidal cell petiolate.....	<i>Blasticomidæ</i>
Posterior coxæ contiguous, or nearly so; antennæ more than six-jointed; first discoidal cell not petiolate.....	5
5. Mesoepimeron divided into two plates, the dorsal one sculptured similar to the mesoepisternum; proepisternum not divided into two plates; antennæ many-jointed, serrate in the female, pectinate in the male	<i>Diprionidæ</i>
Mesoepisternum not divided into two plates; proepisternum divided into two plates; antennæ seven to twelve-jointed, never serrate or pectinate.....	<i>Tenthredinidæ</i>
6. Sternauli (a suture separating the mesosternum from the mesoepisternum) wanting.....	<i>Pterygophoridæ</i>
Sternauli present.....	7
7. Posterior coxæ well separated; propodeum not divided; antennæ short, clavate; transverse median and basal veins interstitial or nearly.....	<i>Pergidæ</i>
Posterior coxæ contiguous or nearly so; propodeum divided; antennæ longer, not clavate; transverse median vein received well removed from the basal.....	<i>Loboceridæ</i>

FAMILY CIMBECIDÆ.

The genera *Praia* André, *Plagiocera* Klug, and *Pachylostictia* Klug are known only from literature and cannot be placed.

TABLE TO THE SUBFAMILIES.

Sternauli represented externally by a carina but not present internally; posterior coxæ well separated..... *Cimbecinæ*
 Sternauli entirely wanting; posterior coxæ contiguous or nearly so..... *Zaræinæ*

SUBFAMILY CIMBECINÆ.

The placing of the fossil group here is done mostly by deduction, but the general form of the fossil insects is that of Cimbecini and they no doubt belong here.

TABLE TO THE TRIBES.

Radial cross-vein present; modern insects..... *Cimbecini*
 Radial cross-vein wanting; fossil insects..... *Phenacoperagini*

Tribe CIMBECINI.

Contains *Cimbex* Olivier and *Trichiosoma* Leach.

Tribe PHENACOPERGINI.

Includes *Phenacoperga* Cockerell and *Pseudocimbex* Rohwer.

SUBFAMILY ZARÆINÆ.

Anal cell of the fore wings with a straight cross-vein.

Pseudoclavellariini

Anal cell of the fore wings broadly contracted in the middle.

Zaræini

Tribe PSEUDOCLAVELLARIINI.

Includes *Pseudoclavellaria* Schulz, *Agenocimbex* Rohwer, and, probably, *Euclavellaria* Enslin.

Tribe ZARÆINI.

Includes *Zaræa* Leach, *Abia* Leach, *Parabia* Semenow, *Amisa* Leach, and *Trichiosomites* Brues.

FAMILY PERREYIIDÆ.

If *Decameria* dates from Lepeletier, and belongs here, the name of the family should be Decameriidae.

Syzygonia Klug, and allies, are known only from descriptions and figures. They may belong here and may form a group in *Philomastiginæ*.

TABLE TO THE SUBFAMILIES.

Anal cell of fore wings present; propodeum divided..... *Perreyiinae*

Anal cell of fore wings wanting; propodeum not divided

Philomastiginæ

SUBFAMILY PERREYIINÆ.

The only genus known to occur here is *Perreyia* Brullé.

SUBFAMILY PHILOMASTIGINÆ.

Founded for *Philomastix* Froggart, but may include other genera.

FAMILY ARGIDÆ.

The proepisternum is not divided. For the time being this family may be divided into two subfamilies by the characters used by Konow and other authors.

TABLE TO THE SUBFAMILIES.

Fore wings with an intercostal vein..... *Arginæ*

Fore wings without an intercostal vein..... *Sterictiphorinæ*

FAMILY BLASTICOMIDÆ.

Founded for *Blasticoma filiceti* Klug.

FAMILY DIPRIONIDÆ.

The same as *Lophyrides* Konow (Genera Insectorum, fas. 29, 1905, p. 41).

FAMILY TENTHREDINIDÆ.

- Prepectus wanting (in some species of *Allantus* there is an obscure lip, but in these the proepisternum meets ventrally)..... 1
- Prepectus present (in *Strongylogasterini* narrow, but in these the proepisternum does not meet ventrally)..... 6
1. Proepisternum ventrally very large and meeting in the middle where it is usually truncate; prosternum usually triangular; mandibles long, strongly falcate; metapostnotum large; elongate species..... 2
- Proepisternum ventrally small and widely separated; prosternum T-shaped; mandibles short, not strongly falcate; metapostnotum short; robust species..... 4
2. Basal vein joining the costa at or very near the origin of the cubitus (in some species in this group the basal vein is strongly curved and is close to costa without joining it so superficially the basal vein appears to join the costa removed from the cubitus)..... *Allantinae*
- Basal vein joining the costa much basad of the origin of the cubitus..... 3

3. Third pleural suture strongly curved, the upper part of the metaepisternum very narrow; mesoepimeron with an oblique carina dorsally; anal cell of the fore wings contracted basally and with an oblique cross-vein; second transverse cubitus normally wanting..... *Dolerina*
 Third suture straight; mesoepimeron without an oblique dorsal carina; anal cell of the fore wings not contracted basally, and either meeting near the middle or with a straight cross-vein; all the transverse cubiti normally present..... *Tenthredinina*
4. Basal vein and first recurrent vein sub-parallel, the first recurrent being subequal in length with the basal vein..... 5
 Basal vein and first recurrent vein strongly diverging, the first recurrent being much shorter than the basal vein *Messina*
5. Third plural suture biangulate; metaepisternum Z-shaped, very narrow; metaepimeron very large, rectangular with the wing process projecting anteriorly; antennæ more than 10-jointed; labrum very long..... *Athaliina*
 Third plural suture straight or nearly so; metaepisternum and metaepimeron of a normal type; antennæ 9-jointed; labrum normal..... *Emprina*
6. Basal vein and first recurrent vein subparallel, the basal vein and first recurrent vein being subequal in length 7
 Basal vein and first recurrent vein strongly diverging, the first recurrent being much shorter than the basal.. 8
7. Metapostnotum linear, usually concealed medially; anal cell of the fore wings petiolate (first anal cell only present) *Phymatocerinæ*
 Metapostnotum large, present medially; anal cell of the fore wings complete, open or with a cross-vein (first and second anal cells present)..... *Selandriinæ*
8. Basal vein joining the costa at or close to the origin of the cubitus..... *Cladiinæ*
 Basal vein joining the costa remote from the origin of the cubitus..... 9
9. Metaepimeron with a small, curved dorsal plate which usually projects laterally beyond the lower part of the small plate; third pleural suture strongly curved... *Nematina*
 Metaepimeron without a dorsal plate; third pleural suture straight; (transverse radius present; anal cell contracted in the middle; second and third cubital cells each receiving a recurrent vein)..... *Hoplocampina*

SUBFAMILY ALLANTINÆ.

TABLE TO THE TRIBES.

- Hind basitarsis distinctly longer than the following joints; posterior calcaria long; pronotum with very large lateral lobes; postnotum of metathorax large and nearly flat..... *Taxonini*
- Hind basitarsis shorter than or subequal with the following joints; posterior calcaria short, robust; pronotum laterally small; postnotum of the metathorax shorter.. 1
1. Metascutellum densely, coarsely punctured; head and thorax coarsely punctured; basal vein slightly basad to the origin of the cubitus; postnotum of the metathorax oblique..... *Eriocampini*
- Metascutellum without punctures; head and thorax finely sculptured or impunctate; basal vein joining the costa at the origin of the cubitus; postnotum of the metathorax flat *Allantini*

Tribe TAXONINI.

Includes *Taxonus* Hartig, *Macremphytus* MacGillivray, *Dimorphopteryx* Ashmead, and *Athlophorus* Burmeister.

Tribe ERICOCAMPINI.

Includes *Eriocampa* Hartig.

Tribe ALLANTIN

Includes *Allantus* Panzer, *Aphilodyctium* Ashmead, *Ametastegia* Costa, *Emphytina* Rohwer, *Monsoma* MacGillivray, *Protoemphytus* Rohwer, and *Monostegia* Costa.

SUBFAMILY DOLERINÆ.

Includes *Dolerus* Panzer and *Loderus* Konow.

SUBFAMILY TENTHREDININÆ.

TABLE TO THE TRIBES.

- Propodeal spiracle placed near the middle lateral margin, and often on the ventral aspect; anterior margin of the scutellum sharply angular, its cephal-caudad length greater than or subequal with its width (in cases where it is subequal the clypeus is truncate); space between the eyes at the antennæ always greater than the length of the eye..... *Perineurini*
- Propodeal spiracle placed at, or near, the lateral, dorsal basal angle; anterior margin of the scutellum truncate or nearly so, its cephal-caudad length much shorter than the width; facial quadrangle variable..... *Tenthredinini*

Tribe PERINEURINI.

Includes *Zaschizonyx* Ashmead, *Tenthredopsis* Costa, *Perineura* Hartig, *Laurentia* Costa, and *Bivena* MacGillivray.

Tribe TENTHREDININI.

Includes *Sciapteryx* Stephens, *Eniscia* Thomson, *Lagium* Konow, *Pachyprotasis* Hartig, *Rhogogaster* Konow, *Macrophya* Dahlbom, *Tenthredella* Rohwer, *Tenthredo* Linnæus, *Labidia* Provancher, *Tenthredina* Rohwer, and *Jermakia* Jakowlew.

SUBFAMILY MESSINÆ.

TABLE TO THE TRIBES.

Anal cell of the fore wings contracted basally and with an oblique cross-vein	<i>Phyllotomini</i>
Anal cell of the fore wings petiolate.....	<i>Messini</i>

Tribe PHYLLOTOMINI.

Includes *Phyllotoma* Fallén, *Caliroa* Costa, *Eriocampoides* Konow, *Phlebotrophia* MacGillivray.

Tribe MESSINI.

Includes *Messa* Leach, *Fenusa* Leach, *Kalionusa* MacGillivray, *Scolioneura* Konow, *Entodecta* Konow, *Metallus* Forbes, *Parabates* MacGillivray, and *Polybates* MacGillivray.

SUBFAMILY ATHALIINÆ.

Founded for *Athalia* Leach.

SUBFAMILY EMPRIINÆ.

TABLE TO THE TRIBES.

Anal cell of the fore wings contracted basally and with an oblique cross-vein; metapostnotum larger; metaepimeron large.....	<i>Empriini</i>
Anal cell of the fore wings not contracted basally and without a cross-vein; metapostnotum smaller; metaepimeron narrow.....	1
1. Anal cell of the fore wings medially contracted and closed	<i>Lycaotini</i>
Lanceolate cell petiolate	<i>Blennocampini</i>

Tribe EMPRIINI.

Founded for *Empria* Lepeletier.

Tribe LYCAOTINI.

Founded for *Lycaota* Konow.

Tribe **BLENNOCAMPINI**.

Includes *Blennocampa* Hartig, *Parophora* Konow, *Rhadinocera* Konow, *Ardis* Konow, *Periclista* Konow, *Isodyctium* Ashmead, *Monophadnoides* Ashmead, *Ceratulus* MacGillivray, *Clarmontia* Rohwer, *Erythraspides* Ashmead, *Monophadnus* Hartig, *Aphanisus* MacGillivray, *Nesotomostethus* Rohwer, *Neocharactus* MacGillivray, *Paracharactus* MacGillivray.

SUBFAMILY **PHYMATOCERINÆ**.

Founded for *Phymatocera* Dahlbom and *Tomostethus* Konow, but probably includes *Neotomostethus* MacGillivray and certain Neotropical genera.

SUBFAMILY **SELANDRIINÆ**.

TABLE TO THE TRIBES.

- Prepectal suture complete, the prepectus large and extending almost to the dorsal margin of the mesoepisternum
Selandriini
- Prepectal suture incomplete, never extending above the ventral margin of the first perapterum, the prepectus smaller
Strongylogasterini

Tribe **SELANDRIINI**.

Includes *Selandria* Leach, *Selandridea* Rohwer, *Hemitaxonus* Ashmead, *Aneugmenus* Hartig, *Eriocampidea* Ashmead, and *Nesoselandria* Rohwer.

Tribe **STRONGYLOGASTERINI**.

Includes *Strongylogaster* Dahlbom, *Prototaxonus* Rohwer, *Thrinax* Konow, *Stromboceros* Konow, *Stromboceridea* Rohwer, and *Eustromboceros* Rohwer.

SUBFAMILY **CLADIINÆ**.

Includes *Cladius* Rossi, *Priophorus* Dahlbom, and *Trichiocampus* Hartig.

SUBFAMILY **NEMATINÆ**.

TABLE TO THE TRIBES.

- Anal cell of the fore wings petiolate..... *Nematini*
- Anal cell of the fore wings contracted and closed in the middle
Hemichroini

Tribe **NEMATINI**.

The transverse radius may be present or wanting, even in the same specimen. In most genera it is wanting.

Includes *Nematus* Panzer, *Amauronematus* Konow, *Brachycolus* Konow, *Cræsus* Leach, *Euura* Newman, *Dineura* Dahlbom, *Diphadnus* Hartig, *Nematinus* Rohwer, *Lygæonematus* Konow, *Mesoneura* Hartig, *Micronematus* Konow, *Pachynematus* Konow, *Pontania* Costa, *Pristiphora* Latreille, *Pteronidea* Rohwer, and *Hypolæxus* Kirby. Does *Pseudodineura* Konow belong here?

Tribe HEMICHOINI.

Includes *Marlattia* Ashmead, *Ceraterocerus* Rohwer, *Hemichroa* Stephens, *Platycampus* Schiödte, and *Anophlonyx* Marlatt.

SUBFAMILY HOPLOCAMPINÆ.

Includes *Hoplocampa* Hartig and *Macgillivrayella* Ashmead.

FAMILY PTERYGOPHORIDÆ.

TABLE TO THE SUBFAMILIES.

Third pleural suture straight.....	1
Third pleural suture strongly curved.....	2
1. Dorsal margin of mesoepimeron strongly concave; metapleuræ with a cephal-caudad suture which makes a fold, the dorsal part curved outwardly; propodeum not emarginate posteriorly; (pronotum with an accessory suture posteriorly; anal cell wanting)	
<i>Pterygophorinæ</i>	
Dorsal margin of mesoepimeron straight or nearly so; metapleuræ without a suture or a fold; propodeum deeply emarginate posteriorly	<i>Acordulecerinæ</i>
2. Abdomen long, tapering posteriorly, ninth dorsal segment elongate in female; anal cell wanting; head about twice as broad as high.....	<i>Phylacteophaginæ</i>
Abdomen normal; anal cell petiolate; head normal....	<i>Euriinæ</i>

SUBFAMILY PTERYGOPHORINÆ.

Founded for *Pterygophorus* Klug. Does *Cerospastus* Konow belong here?

SUBFAMILY ACORDULECERINÆ.

TABLE TO THE TRIBES.

Anal cell wanting, metaepisternum smaller than the metaepimeron; pronotum without an accessory suture posteriorly.....	<i>Acordulecerini</i>
Anal cell incomplete, but present; metaepisternum larger than the metaepimeron; pronotum with an accessory suture posteriorly	<i>Conocoxini</i>

Tribe ACORDULECERINI.

Includes *Acordulecera* Say and *Parantherix* Westwood. *Thulea* Say may belong here.

Tribe CONOCOXINI.

Founded for *Conocoxa* Rohwer and *Nithulea* Rohwer.

SUBFAMILY PHYLACTOPHAGINÆ.

Founded for *Phylactophaga eucalypti* Froggatt. *Cladomacra* Smith may belong here.

SUBFAMILY EURIINÆ.

The remarks about the position of the members of this subfamily (p. 473, Ent. N., vol. 21, 1910) are not in accord with the present arrangement.

TABLE TO THE TRIBES.

Labrum longer than the short clypeus; antennæ inserted close to the clypeus, the distance subequal with the length of the scape; antennæ 15-jointed..... *Diphamorphini*
 Labrum shorter than the long clypeus; antennæ inserted well above the clypeus; antennæ less than 15-jointed..... *Euriini*

Tribe DIPHAMORPHINI.

Founded for *Diphamorphos* Rohwer.

Tribe EURIINI.

Includes *Eurys* Newman, *Neoeurys* Rohwer, *Europsis* Kirby, and *Clarissa* Kirby.

FAMILY PERGIDÆ.

In this family belong *Ceralces* Kirby and *Perga* Leach (with its recent segregates).

FAMILY LOBOCERIDÆ.

Other than *Loboceras* Kirby and *Haplostegus* Konow no other genera known from specimens occur here. Perhaps a number of the genera in *Lobocrotides* Konow belong here.